S. 40.

United States Department of Agriculture,

DIVISION OF SOILS.

LIST OF SOIL TYPES ESTABLISHED BY THE DIVISION OF SOILS IN 1899 AND 1900, WITH BRIEF DESCRIPTION.

The following list embraces all soil names authorized for use on the soil maps of this Division to December 31, 1900. The field parties of the Division are expected to conform to this list so far as possible, correlating other soils with these and avoiding any unnecessary increase in the number of soil types. Where this can not be done, the same terse style of describing any new types encountered should be adopted.

Bingham gravelly loam.—Sandy loam, 6 feet or more in depth, containing gravel within 3 feet or less of the surface; always well drained. Gravel usually from ½ to 1½ inches in diameter, generally increasing in amount in lower depths. High bench land in Salt Lake and Weber counties and sloping valley floor in narrower portions of Sevier Valley, Utah. When too high for irrigation, this soil is used to some extent for dry farming to wheat; when irrigated, it forms desirable land for alfalfa, grain, and fruit. Considerable seepage from canals.

Bingham stony loam.—Sandy loam, 4 to 6 feet deep, containing stones and boulders, underlaid by red rock and masses of boulders. Lower slopes of the mountains—Salt Lake and Weber counties, Utah. Has no agricultural value at present.

Cecil clay.—Tenacious clay soil of reddish color, 6 inches deep; stiff tenacious clay subsoil of red color, both soil and subsoil containing quartz and fragments of undecomposed rock. Occasional rock areas and isolated boulders, or "niggerheads." High rolling land. Derived from gabbro and other eruptive rocks—Piedmont plateau, Atlantic coast States. Recognized as strongest soil of this region for general farming purposes. Adapted to grass, wheat, and corn in Maryland and Pennsylvania; export tobacco and wheat in Virginia; and to corn, wheat, and cotton in the Carolinas.

Cecil loam.—Soil is a loam, or heavy sandy loam, of brown or yellowish color, 10 inches deep; heavy loam or clay loam subsoil of reddish color, both soil and subsoil containing fragments of quartz, with usually considerable quartz on the surface. High rolling land. Derived from granite, gneiss, and other metamorphosed rocks. Occurs in Piedmont plateau, Atlantic coast States. Recognized as good soil for general farming purposes, but requires careful treatment. Adapted to wheat and corn in Maryland and Pennsylvania; export tobacco and wheat in Virginia; and export tobacco, wheat, and cotton in the Carolinas.

Cecil mica loam.—Brown loam, 12 inches deep, underlaid by clay loam, both soil and subsoil consisting largely of small fragments of muscovite mica. Rolling land of Piedmont plateau. Derived

from decomposition of highly crystalline rocks; typically developed in Cecil County, Maryland, and Lancaster County, Pennsylvania. Recognized as good land for general farming purposes.

Cecil sandy loam.—Soil is sandy loam of a brownish or yellowish color, 6 to 15 inches deep; subsoil is a loam or clay, containing coarse sand of reddish or yellowish color, both soil and subsoil containing fragments of quartz, with usually considerable quartz on the surface. High rolling land of Piedmont plateau, Atlantic coast States. Partly sedimentary; derived from granite, gneiss, and other metamorphosed rocks. Corn and cotton soils of North Carolina. Lightest desirable soil for general farming purposes.

Chicopee gravel loam.—Sandy loam, 3 feet or more in depth, containing 20 to 40 per cent of rounded gravel. Level plains, Connecticut Valley, near Springfield, Massachusetts. Lacustrine deposits. Has no agricultural value at present.

Conestoga loam.—Brown loam, 12 inches deep, underlaid by light clay loam to depth of 30 inches, grading into decomposed schist. Rolling valley land, Lancaster County, Pennsylvania. Derived from decomposition of limestone schist; has a greasy or soapy feel when rubbed between the fingers. Recognized as one of the fine soils of this locality for general agricultural purposes.

Connecticut meadows.—Fine sandy or silty loam, 3 feet or more in depth. River bottom soil, generally well drained, 15 or 20 feet above mean level of the river; subject to occasional overflow; found along Connecticut River in Connecticut and Massachusetts. Glacial lake sediment reworked by river action. Recognized as fine land for corn, grass, potatoes, and such crops.

Connecticut swamps.—Wet lands of various origin and texture, subject to continual overflow either from Connecticut River or high-lying streams and springs. Owing to poor drainage and presence of almost constantly standing water, soils have no agricultural value except for occasional hay crops.

Conowingo barrens.—Loam 3 feet or more in depth, frequently filled with fragments of broken rock increasing in size and amount in lower depths; often there is no soil covering over the broken fragments of rock. Rolling upland of Piedmont Plateau. Derived from decomposition of serpentine and rocks of similar nature—typically developed in northern counties of Maryland and in Chester County, Pa. Generally unproductive and frequently worthless for agricultural purposes, due to slight depth of soil covering and usually ascribed to preponderance of magnesia.

Conowingo clay.—Stiff tenacious red clay 3 feet or more in depth. High rolling land of Piedmont Plateau. Derived from decomposition of serpentine and similar rocks—typically developed in Cecil County, Md. Strong and productive soil for general agricultural purposes. The difference in the texture of the soil and the agricultural value between this and the Conowingo barrens have never been satisfactorily explained.

Donegal gravelly loam.—Sandy loam 12 inches deep with rounded river gravel seldom exceeding 30 per cent, underlaid by same material with slightly more gravel. Sloping terraces along Susquehanna River in Lancaster County, Pa. River deposit. Adapted to market gardening and present style of wrapper tobacco; soil is too light and thin for general agricultural purposes.

Durham sandy loam.—Sandy loam 12 inches deep, overlying yellow clay of Piedmont area, North Carolina. Ten to thirty per cent of quartz and rock fragments in both soil and subsoil. Excellent cotton soil, good for corn and also for tobacco and truck to some extent.

Edgemont stony loam.—Loam containing 30 to 60 per cent of large fragments of broken sandstone, underlaid by loose mass of broken sandstone. Rolling or steep sloping foothills or mountain sides. Derived from degradation of Cambrian sandstone. Soil has little agricultural value for general purposes, but has lately been used with great success for mountain peaches on the northern and western exposures within elevations of 1,000 feet.

Elkton clay.—Brown loam 9 inches deep; subsoil is heavy mottled yellow and gray clay loam containing some silt It is of a dry nature rather than plastic. Flat terrace occurring in lowest Columbia terrace in Cecil and Kent counties, Md. Recognized as good land for general farming purposes when well drained; frequently needs artificial drainage.

Elmwood loam.—Dark brown fine sandy loam 2 feet in depth, overlying close poorly drained clay. Level terraces along Connecticut River, Connecticut and Massachusetts. Lacustrine deposit; has very little present agricultural value on account of compact nature and poor underdrainage.

Elsinore sandy loam.—Light-colored sandy loam 4 feet in depth, underlaid by coarse sand grading into gravel. Low level portions of Sevier Valley, Utah. Derived from river transported material; poorly drained and contains considerable alkali near the surface. At present only adapted to salt grass meadows.

Enfield sandy loam.—Sand 2 feet in depth, underlaid by Triassic stony loam; extending as a terrace around the glacial hills of the Connecticut Valley in Connecticut and Massachusetts. Lacustrine deposit over glacial material. Recognized as good soil for the wrapper tobacco of that locality; rather light for general agricultural purposes.

Fancher sandy loam.—Dark red sandy loam 6 feet or more in depth derived from stream wash from foothills, well drained and free from alkali, containing relatively high percentage of organic matter. Occupies foothill stream bottoms and sinks in Fresno County, Cal. Generally adapted to fruit and vineyards.

Fresno red sand.—Compact red sand 6 feet or more in depth, derived from wash from foothill streams subsequently modified by wind action, well drained and free from alkali. Ridge between foothill streams in Fresno County, Cal. Adapted to vines, stone fruits, and truck crops.

Fresno sandy loam.—Sandy loam or very fine sand with properties of sandy loam, 3 feet in depth—white in color, ashy texture, and locally known as "white ash land"—underlaid by bluish calcareous alkali hardpan which softens upon application of water. Lower level plains of Fresno County, Cal.; derived from degradation of beds of sand, clay, and volcanic ash. Generally contains alkali; when free from such it is an excellent grape and fruit soil.

Fresno fine sandy loam.—Fine sand having the properties of a sandy loam to a depth of 3 feet, grading into a coarse sand. Coastal and delta plains of rivers; occurring in Orange County, Cal., and

Weber County, Utah. Well adapted to such crops as alfalfa and grain, but not so well adapted to fruit except when well drained.

Fresno sand.—Coarse loose incoherent sand 6 feet or more in depth, naturally free from alkali. Level plains; origin, river wash, delta plains; occurring in Orange and Fresno counties, Cal., and in Weber County, Utah. Adapted to stone fruits and truck when irrigated; occasionally dry farmed to wheat.

Fullerton sandy adobe.—Brown sandy adobe to a depth of 5 feet, underlaid by compact sand or sandstone. Residual material derived from weathering of underlying shaly sandstone. Foothills extending down into level valley lands, Orange County, Cal. Dry farmed to wheat; when irrigated used to some extent for citrus fruits.

Garner stony loam.—Clay and coarse sand with many fragments of stones, 6 to 12 inches deep, underlaid by tenacious clay. The underlying clay is a brick or tile clay. Surface covering packs like a good Macadam road. Soil is extremely difficult to till and at present has little or no agricultural value. Rolling uplands along stream courses of coastal plain region, North Carolina.

Gila fine sandy loam.—Fine sandy loam or very fine sand 6 feet or more in depth, derived from Gila River deposits and subsequently modified by wind action. Low bluffs and plains adjacent to Gila River, Arizona. Adapted to alfalfa and grain crops.

Glendale loess.—Silt 6 feet or more in depth, typical loess texture. Level plain forming low divide between Salt River and Agua Fria River, Arizona. Formed by wash from Cave Creek, generally well drained and free from alkali. Adapted to grain and alfalfa, lighter phases to fruit growing.

Goldsboro compact sandy loam.—Sharp sandy loam 3 feet or more in depth, forming a firm compact surface in roads and requiring frequent cultivation with young and tender vegetation to prevent injury from the compact crust which is liable to form. Level plains in coastal plain region of North Carolina. Adapted to cotton and corn.

Goldsboro silt loam.—Fine silt and sharp sand mixed, to a depth of 18 inches, underlaid by silt loam. Level low-lying areas of coastal plain region, North Carolina, generally adjacent to stream areas; well drained. Considered very productive soil for such crops as corn, cotton, and grass.

Hagerstown clay.—Heavy red loam 12 inches deep, underlaid by stiff tenacious red clay. Rolling valley land. Derived from weathering of pure massive limestone—central Pennsylvania and Shenandoah Valley of Maryland and Virginia. Recognized as one of the strongest soils for general agricultural purposes.

Hagerstown clay loam.—Heavy reddish clay loam 24 inches deep, overlying stiff tenacious red clay. Rolling valley land. Derived from weathering of pure massive limestone—central Pennsylvania and Shenandoah Valley of Maryland and Virginia. Recognized as one of the strongest soils for general agricultural purposes.

Hagerstown loam.—Brown or yellow loam 12 inches deep, yellow clay loam to 24 inches underlaid by stiff tenacious red clay. Rolling valley land. Derived from weathering of pure massive limestone—central Pennsylvania and Shenandoah Valley of Maryland and Virginia. Recognized as a strong soil for general agricultural purposes.

Hagerstown shale loam.—Loam 12 inches deep containing 20 to 60 per cent of fragments of shale resting upon a mass of broken shale. Ridges in limestone valley of Lancaster County, Pa. Thin dry soil derived from disintegration of shales, requiring very thorough cultivation, but when so cultivated it is adapted fairly well to general agricultural purposes.

Hartford sandy loam.—Sandy loam 12 inches deep, underlaid by sand to a depth of 3 feet or more. Lacustrine deposits. Level or gently rolling terraces of the Connecticut Valley, Connecticut and Massachusetts. Recognized as one of the best soils for the present type of wrapper tobacco of that locality; adapted to truck, but too light and sandy for general farm crops.

Hempfield stony loam.—Red loam 12 inches deep with from 30 to 60 per cent of rounded "iron stones," underlaid by heavy clay loam containing quantities of rounded iron stones. Elongated areas in limestone valleys of Lancaster County, Pa. Derived from decomposition of diabase and trap rocks. Areas are small in extent and of little agricultural value at present.

Holyoke stony loam.—Loam 3 feet or more in depth, containing from 10 to 50 per cent of large stones and bowlders. Rough mountainous country and foothills—Connecticut Valley, Massachusetts. Glacial origin, diabase material predominating. Country is so rugged and stony that the land has little present agricultural value except as mountain pasture.

Hondo meadows.—Dark-colored clay loam or clay soil, occupying river bottoms or lowlands; subject to overflow. Pecos Valley, New Mexico. This soil generally contains alkali, and is poorly drained. Naturally adapted to pasturage, but when underdrained and protected from overflow it is adapted to alfalfa and grain.

Jordan clay.—Tenacious clay or clay loam, 6 feet or more in depth. Level, low-lying plains, poorly drained, generally containing large quantities of alkali. Origin, lacustrine deposits around Great Salt Lake, Utah. This soil has little present agricultural value, on account of poor drainage, general occurrence of alkali, and impervious nature of the material.

Jordan loam.—Loam, 3 feet deep, underlaid by stiff, tenacious clay. Level, low-lying plains, generally containing considerable alkali. Origin, lacustrine, or river deposits, in Salt Lake and Sevier counties, Utah. When free from alkali and well drained, this soil is good for alfalfa and grain crops.

Jordan meadows.—Loam, 2 feet deep, clay to 4 feet, sand to 5 feet, underlaid by gravel. Low-lying wet land, usually containing alkali; occurring along Jordan River, Utah. Formerly this land was good for general agricultural purposes, but it is now generally abandoned, except for pasturage, on account of seepage from the bench lands and the accumulation of alkali.

Jordan sand.—Medium to fine sand, 6 feet or more in depth. High bluffs, in places occur as dunes; well drained and free from alkali. River deposit along Jordan and Weber rivers, Utah. This soil is not well adapted to general crops on account of its position, open texture, and dry nature.

Jordan sandy loam.—Sandy loam, 2 feet deep, loam to 4 feet, sand to 5 feet, underlaid by clay. Level plains, generally well

drained. Lacustrine deposits and river wash in Salt Lake County, Utah. When well drained and free from alkali, it is recognized as one of the best soils of the locality for general agricultural purposes, such as grain, alfalfa, and fruit.

Leonardtown loam.—Yellow silty loam, closely resembling loess, 9 inches deep, underlaid by red and mottled clay loam with peculiar interlocking clay lenses and pockets of sand. Slightly rolling upland; occurring in Calvert and St. Mary counties, Maryland. Good soil for general farming—wheat and grass land. Much of the area is lying out as waste land or grown up in white oak and pine forests, and some of the more level portions need underdrainage.

Manor stony loam.—Reddish-yellow loam, 12 inches deep, with 20 to 60 per cent of broken fragments of schist; subsoil to depth of 3 feet is slightly heavier than the soil and deeper red in color, underlaid by a mass of broken fragments of schist. Rolling upland of the Piedmont plateau. Derived from decomposition of chlorite schists and similar rocks, Lancaster County, Pennsylvania. Recognized as fairly productive soil for general agricultural purposes.

Maricopa clay loam.—Stiff reddish clay loam, 6 feet or more in depth. Low valley land, Salt River Valley, Arizona. Colluvial soil, heaviest products of the waste from the mountain slopes. Adapted to grain crops, but rather heavy and compact for alfalfa.

Maricopa gravelly loam.—Light sandy loam with 10 to 40 per cent of rounded gravel and stones to a depth of 6 feet or more. Lower mountain slopes and margins of valley lands, Salt River Valley, Arizona. Colluvial soil, first product of the waste from the mountain slopes. Excellent fruit soil when favorably situated for irrigation.

Maricopa loam.—Reddish loam, 3 to 6 feet in depth, underlaid by loam containing layers of calcareous hardpan. Lower valley land, Salt River Valley, Arizona. Colluvial soil derived from finer waste of mountain slopes. Adapted to alfalfa and grain.

Maricopa sandy loam.—Sandy loam with less than 10 per cent of gravel, 3 feet in depth, underlaid by sandy loam containing layers of calcareous hardpan. Medium elevation in Salt River Valley, Arizona. Colluvial soil derived from waste of mountain slopes. Adapted to alfalfa, fruit, and grain.

Meadow.—When this term is unqualified it stands for low-lying, flat, usually poorly drained land along streams and embayments. Generally adapted to grass and pasturage, and occasionally used for general farming; but for such purposes, artificial drainage is requisite.

Miami black clay loam.—Black clay loam 12 inches deep, underlaid by same material—which is rather heavier and more tenacious—occupying slight depressions in the uplands of Montgomery and adjoining counties, Ohio. Glacial origin. Naturally poorly drained and formerly swamps, in which water stood during the greater part of the year. Recently they have been thoroughly drained and are now considered as productive as the other upland soils for general farm purposes.

Miami clay loam.—Light-colored loam 12 inches deep, underlaid by a tenacious clay loam, which in turn is underlaid by boulder clay at a depth of 5 feet. Level plains except adjacent to the streams. Glacial origin. The surface of the country was formerly covered

by boulders, which have largely been removed. Recognized as one of the best soils for general agricultural purposes.

Miami gravelly loam.—Brown or reddish loam 12 inches deep, with 15 to 30 per cent of rounded gravel, underlaid to a depth of 24 inches by a stiff, tenacious clay loam, which is in turn underlaid by a layer of gravel. Level or gently rolling second bottoms of the larger rivers of Montgomery County, Ohio. Originally glacial material worked over by the river and streams. Recognized as fine land for general farm purposes.

Miami loam.—Black loam 12 inches deep, resting on some slightly heavier material. Level first bottom land of Montgomery County, Ohio—subject to overflow. Glacial material reworked by rivers and streams. Finest corn land of the locality, but the growth is too rank for either wheat or grass, as the wheat is liable to lodge and the grass to be choked by weeds.

Miami sandy loam.—Sandy loam 2 feet in depth, overlying loam. First bottoms, subject to overflow—Montgomery County, Ohio. Glacial material, reworked by the rivers and streams. Narrow valley bottoms, too light for general farm crops, but adapted to market gardening.

Muck.—Vegetable mold more or less thoroughly disintegrated and mixed with earth—occurring in low, damp places.

Neuse clay.—Dark, tenacious, mottled gray clay, 3 feet or more in depth. Stream deposit, often subject to overflow—occurring along stream bottoms in Coastal Plain region of North Carolina. Poorly adapted to agricultural purposes on account of close, sticky nature and poor drainage, but when well drained it is good cotton land.

Norfolk fine sandy loam.—Fine sandy loam 12 inches deep, underlaid by light friable clay. Level plains in Coastal Plain region of North Carolina. Good soil for late and heavy truck, cotton, and corn.

Norfolk loam.—Fine-grained sandy loam 12 inches deep, reddish yellow sandy loam 12 to 30 inches, underlaid by red sand. Gently rolling land, forming divide in St. Mary and Calvert counties, Maryland. Good land for small fruits and heavy truck—good Maryland type of tobacco land.

Norfolk sand.—Coarse sandy soil 6 to 9 inches deep, yellow, coarse, sandy subsoil to a depth of 3 feet or more. Level plains and river necks typically developed in the Coastal plain region, Atlantic and Gulf coast States. Typical early truck land.

Norfolk sandy soil.—Coarse, yellow, sandy soil 6 to 12 inches deep, coarse, yellow, sandy subsoil, resting on red or yellow clay 18 to 30 inches deep. Level or gently rolling land of the Coastal Plain region, Atlantic Coast States. Adapted to early truck, bright tobacco, and cotton, according to situation as regards ocean and climatic conditions.

Peat.—Vegetable matter consisting of roots and fibres, moss, etc., in various stages of decomposition; occurring as a kind of turf or bog—usually in low situations—always more or less saturated with water.

Pecos conglomerate.—Sandy loam to a depth of 2 feet, containing a high percentage of rounded gravel, resting upon conglomerate or gravel beds. Bench land and bluffs—Pecos Valley, New Mexico.

Soil derived from disintegration of conglomerate beds, well drained and free from alkali salts, readily transmits seepage waters. Not adapted to any agricultural purpose at present.

Pecos gypsum.—Sandy loam or light loam soil, underlaid by soft saccharoidal gypsum at a depth of 2 feet. Gypsum is often present at the surface. Level bench land—Pecos Valley, New Mexico. Derived from disintegration of gypsum deposits, and possesses remarkable power of transmitting seepage waters by capillarity and gravitational flow. With high salt content of irrigation water in this locality it is not desirable land for agricultural purposes.

Pecos sandy loam.—Soil is fine-grained gray sandy loam, 30 inches deep; subsoil is a gray light loam, slightly heavier than the soil. High level valley land derived from lacustrine deposits, well drained and generally free from alkali; occurring in Pecos Valley, New Mexico. Recognized as best general farming land of this locality.

Placentia sandy loam.—Sandy loam, 3 feet in depth, underlaid by sandy adobe. Surface material is compact and grades into the sandy adobe. High mesa land near the ocean in Orange County, California, and in some of the valley lands and high plains of the foothills in northern part of the same county. Remnant of old flood plain subsequently modified by wind action. Well drained and free from alkali. At present adapted to citrus fruits when water supply is available; dry farmed to wheat and barley.

Pocoson.—Higher lands of the swamp areas. For the most part a close, impervious, fine sandy or gray ash-colored soil with patches of cold, stiff brick clay and black soil composed of sand and vegetable matter, generally a thick covering of scrub pine, white bay, galberry bushes, and bramble vines with tufts of wire grass and broom sedge, usually surrounded with irregular strips of cane brake or gum and cypress swamps. Occurs in the coastal plain region, South Atlantic and Gulf States.

Podunk fine sandy loam.—Fine sandy loam, 12 inches deep, underlaid by fine sand. Level terrace of the Connecticut Valley, Connecticut and Massachusetts. Lacustrine deposit. Rather light for general farm purposes, but well adapted to present type of broadleaf wrapper tobacco.

Redfield clay.—Clay 5 feet in depth, underlaid by sand. Clay is quite tenacious and difficult to till. Poorly drained soil, containing considerable alkali. Lowest and most level portions of Sevier Valley, Utah. Of little agricultural value except as meadow land.

Redfield loam.—Vermilion-colored loam, 5 feet deep, underlaid by clay to a considerable depth. Poorly drained soil, containing large quantities of alkali. Level floor of Sevier Valley, Utah. Excellent land for general farming purposes when drained and free from alkali.

Redfield sandy loam.—Red sandy loam, 6 feet in depth. Soil derived from disintegration of red sandstone, and is usually well drained. In certain areas soil contains gravel within 3 feet of surface, and this gravel increases in amount and size in lower depths. Valley floor, sloping gently toward the mountains or as upper bench land along Sevier Valley, Utah. Adapted to alfalfa and grain when so situated that irrigation is possible.

River wash.—Coarse sand and boulders, generally in long, narrow areas; subject to overflow in times of flood; occupying bottoms of river channels through arid West. No agricultural value.

Roswell loam.—Loam, 4 feet deep, underlaid by clay loam and clay. Level, low bench land along Pecos River, New Mexico. Lacustrine deposit. Soil is naturally poorly drained and contains alkali, but when well drained and free from alkali it is recognized as good soil for general agricultural crops.

Roswell sandy loam.—Heavy gray sandy loam, 12 inches deep; subsoil is a light loam underlaid by clay at a depth of 5 feet. Level second bottom land derived from lacustrine deposits, poorly drained, often containing alkali; occurring in Pecos Valley, New Mexico. Recognized as best farming land of Roswell district.

Salt Lake loam.—Loam, 2 feet deep, underlaid by sandy loam. Level plains representing recent lake bottom, poorly drained, containing excessive amounts of alkali. Soil is not adapted to agricultural crops at present, on account of low-lying position, imperfect drainage, and high salt content.

Salt Lake sand.—Medium oölitic, calcareous sand, 4 feet deep, underlaid by clay. Level areas, or dunes, along the shores of Great Salt Lake, Utah. Areas are so limited, and on account of the relative position to other lands, they possess no agricultural value.

Salt Lake sandy loam.—Sandy loam, 2 feet deep, underlaid by fine sand. Level plains, recent Lake bottoms, Weber County, Utah. Soil is poorly drained and bare of vegetation, containing an excess of alkali. From these causes it has no present agricultural value.

Salt River adobe.—Clay loam with adobe properties 2 feet deep, underlaid by sandy loam or loam. Low-lying land, containing alkali, and rather poorly drained—Salt River Valley, Arizona. Sediment of prehistoric irrigation with muddy water. Generally adapted to alfalfa and small grain.

Salt River gravel.—Coarse gravel of undetermined depth. Bluff along Salt River, Arizona. Of no present agricultural value.

Sand Hill.—Coarse, loose, incoherent soil, 10 feet or more in depth. Hills from 20 to 200 feet or more in height, representing old shore lines of ocean formed by river action and wind, occurring as long, narrow ranges and frequently as isolated hills—southern Atlantic Coast States. Material is generally so loose and incoherent and so thoroughly drained that it seldom has any agricultural value.

San Joaquin black adobe.—Heavy black or brown adobe soil 4 to 6 feet deep, subsoil varies from sandy adobe to heavy clay adobe. Margins of valleys along foothill streams in California, often extending out into the valleys. Derived from crystalline rocks. Soil is difficult to till but very productive. Adapted to grain crops, and used at present for citrus fruits, where water supply is adequate.

San Joaquin red adobe.—Sticky red adobe, with texture of loam, 6 feet in depth; usually a layer of red sandstone hardpan in lower 3 feet. Margins of plains adjacent to foothill streams, derived from foothill stream wash—Fresno County, California. Adapted to grain crops.

San Joaquin sandy loam.—Reddish light sandy loam 3 feet in depth, frequently hard and compact, underlaid by red sandstone hardpan. Along foothill streams hardpan is absent, the sandy loam

extending to a depth of 6 feet or more. Soil is derived from disintegration of red sandstone rock, well drained, free from alkali, and frequently covered with hogwallow mounds. Sloping plains of San Joaquin Valley, California. Adapted to grain crops, and where hardpan is more than 3 feet from the surface it is adapted to fruits and vineyards.

Sanpete loam.—Loam 4 feet deep, underlaid by clay. Level floor of Sevier Valley, Utah. Soil contains considerable alkali and drainage is often poor, but when drained and free from alkali this soil is excellent for general farming purposes.

Santiago loam.—Red loam 3 feet deep, sandy loam to 4 feet, underlaid by gravelly sandy loam. Harsh compact soil washed from foothills by the streams; occurring along margin of Coastal Plain near foothills in southern California. Considered unproductive soil, and at present little used for agricultural purposes.

Santiago sandy loam.—Sandy loam 3 feet deep, underlaid by sand to 5½ feet, which is in turn underlaid by sand and gravel. Over a considerable area the gravel comes to the surface and increases in size and amount in the lower depths. Lower delta plains of the foothill streams in Orange County, California. Dry farmed to wheat and barley, and under irrigation at present adapted to fruits of that locality.

Santiago silt loam.—Silt loam 2 feet in depth, underlaid by sand. Lower delta plains in Orange County, California. When well drained and free from alkali this soil is adapted at present to the fruits of the locality.

Sassafras gravelly loam.—Brown gravelly loam 9 inches deep. Subsoil is red gravelly loam 30 inches deep, underlaid by red sand and gravel. Sloping upland in Kent County, Maryland. With only 10 to 15 per cent of medium gravel this is recognized as a valuable soil for such crops as corn, peaches, pears, and canning crops.

Sassafras loam.—Brown loam 10 inches deep, underlaid by heavy yellow loam subsoil. Gently rolling upland in Cecil and Kent counties, Maryland, and level terraces in more southern counties of Eastern Shore; level or gently rolling terraces and level uplands in southern Maryland. Good land for general agricultural purposes.

Sassafras sandy loam.—Brown sandy loam 9 inches deep, resting on yellow loam of a slightly sand nature. Occurs as low-lying terraces in St. Mary and Calvert counties, Maryland. Of medium value for general farming purposes.

Savannah.—Low wet land in the Coastal Plain region of the south Atlantic and Gulf States, from 10 to 25 feet above sea level. Generally broad, flat, open plains, having no growth other than sparse and tall longleaf pine and in the southern area a thick undergrowth of saw palmetto, grass, and cane.

Selma heavy silt loam.—Heavy silt loam 20 inches or more in depth, underlaid by a stiff mottled clay. Low-lying level tracts in Coastal Plain region, North Carolina. Natural drainage is poor and for this reason the soil is unproductive, but when drained it is good cotton and grass land.

Selma silt loam.—Silt mixed with fine sand 18 inches in depth, underlaid by silt loam. Level or gently rolling areas, generally well drained—Coastal Plain region, North Carolina. Adapted to cotton and corn; at present a fine type of soil for bright tobacco.

Suffield clay.—Clay loam 12 inches deep, underlaid by close laminated clay. Lacustrine deposit—very poorly drained. Level areas in Connecticut Valley, Connecticut and Massachusetts. On account of poorly drained condition and close structure it is not adapted at present to any agricultural purposes, although used to some extent for pasturage.

Sierra adobe.—Sandy adobe containing small amounts of gravel to a depth of 2 or 3 feet, generally underlaid by red sandstone hardpan or granite rock. Low foothills in Fresno County, California. Residual soil derived from decomposition of underlying granite, used to some extent for dry farming to wheat and barley.

Susquehanna clay.—Clay loam 6 inches in depth containing gravel overlying stiff, tenacious red or white pipe clay. Hills and rolling land on the western border of Coastal Plain region, Maryland and adjoining States. Clay is very refractory, hard to cultivate, and has at present little or no agricultural value.

Susquehanna gravel.—Gray loam 12 inches deep containing from 30 to 60 per cent of rounded gravel, underlaid by gravel beds and yellow clay. River wash and delta deposits; occurring generally along stream courses or as terraces or hills of the Coastal Plain region. Generally recognized as poor and unproductive land.

Triassic stony loam.—Red loam containing 10 to 40 per cent of fragments of red Triassic sandstone. Glacial origin. Surface was originally covered with a mass of boulders which have largely been removed. Hills and rolling land in the Connecticut Valley, Connecticut and Massachusetts. Adapted to general farm crops of the region.

Windsor sand.—Coarse to medium sand containing fine gravel, 8 inches deep, loose and incoherent. Subsoil is practically the same as the soil, with iron crusts typically developed in the Maryland area. Occurs as level plains in the Connecticut Valley and southern Maryland. Generally considered too light and poor for general farming but is used to some extent for tobacco, peaches, and truck.

MILTON WHITNEY,
Chief.

WASHINGTON, D. C., *March 1, 1901.*

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